Surface Drainage (ft)

Field Ditch

Definition

A graded ditch for collecting excess water in a field.

Scope

This standard applies to drainage ditches installed to collect water from a field. It does not apply to surface drainage, main or lateral (608) or to grassed waterways or outlets (412).

Purpose

To drain surface depressions; collect or intercept excess surface water, such as sheet flow, from natural and graded land surfaces or channel flow from furrows and carry it to an outlet; and collect or intercept excess subsurface water and carry it to an outlet.

Conditions where practice applies

Applicable sites are flat or nearly flat and:

1. Have soils that are slowly permeable (low permeability) or that are shallow over barriers, such as rock or clay, which hold or prevent ready percolation of water to a deep stratum.
2. Have surface depressions or barriers that trap rainfall.
3. Have insufficient land slope for ready movement of runoff across the surface.
4. Receive excess runoff or seepage from uplands.
5. Require the removal of excess irrigation water.
6. Require control of the water table.
7. Have adequate outlets available for disposal of drainage water by gravity flow or pumping.

Design criteria

Drainage field ditches shall be planned as integral parts of a drainage system for the field served and shall collect and intercept water and carry it to an outlet with continuity and without ponding.

Investigations. An adequate investigation shall be made of all sites.

Location. Ditches shall be established, insofar as topography and property boundaries permit, in straight or nearly straight courses. Random alinement may be used to follow depressions and isolated wet areas of irregular or undulating topography. Excessive cuts and the creation of small irregular fields shall be avoided.

On extensive areas of uniform topography, collection or interception ditches shall be installed as required for effective drainage.

Design. The size, depth, side slopes, and cross section area shall:

1. Be adequate to provide the required drainage for the site.
2. Permit free entry of water from adjacent land surfaces without causing excessive erosion.
3. Provide effective disposal or reuse of excess irrigation water (if applicable).
4. Conduct flow without causing excessive erosion.
5. Provide stable side slopes based on soil characteristics.
6. Permit crossing by field equipment if feasible.
7. Permit construction and maintenance with available equipment.

Plans and specifications

Plans and specifications for constructing drainage field ditches shall be in keeping with this standard and shall describe the requirements for properly installing the practice to achieve its intended purpose.

Surface Drainage

Field Ditch Specifications

Excavation

The ditch shall be cut to the line and grade shown on the plans or as staked in the field.

Spoil placement

Spoil shall be spread and leveled so that the surface water can flow into the ditch. If the spoil is to be farmed, it shall be spread so that farming operations will not be hindered.

Maintenance

Provisions shall be made for maintaining the ditches and their outlets to permit effective drainage.

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

TECHNICAL GUIDE
SECTION IV

NATIONAL
SUPPLEMENT
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Surface Drainage, Field Ditch (ft)

Planning considerations for water quantity and quality

Quantity

1. Effects on water budget components, especially relationships between runoff and infiltration.
2. The effect of changes in the water table on the rooting depth for anticipated land uses.

Quality

1. Downstream effects of erosion and yields of sediment and sediment-attached substances.
2. Effects on the salinity of the soil in the drained field.
3. Effects on the loadings of dissolved substances downstream.
4. Potential changes in downstream water temperature.
5. Effects on wetlands or other water-related wildlife habitat.
6. Effects on the visual quality of downstream water courses.